

Notice of Allowability

Application No.

10/721,817

Applicant(s)

DOZORETZ ET AL.

Examiner

Art Unit

John H Le

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/12/2004.
2. ☒ The allowed claim(s) is/are 1-23.
3. ☒ The drawings filed on 04 January 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Reasons for Allowance

1. Claims 1-23 are allowed.
2. The following is an examiner's statement of reasons for allowance:

In combination with other limitations of the claims, the cited prior arts fails to teach a method of providing an extended range of absolute pressure measurements of a gas in a chamber, comprising steps of: determining the absolute pressure in the chamber to be equivalent to the measured absolute chamber pressure, when the measured absolute chamber pressure is less than the cross-over pressure level; determining the absolute pressure in the chamber to be equivalent to a normalized differential pressure, when the measured absolute pressure is greater than the cross-over pressure level, including determining the normalized differential pressure by adding a correlation factor to the measured differential chamber pressure, wherein the correlation factor is equal to the measured absolute chamber pressure minus the measured differential chamber pressure, as recited in claim(s) 1.

In combination with other limitations of the claims, the cited prior arts fails to teach a method of providing an absolute chamber pressure profile of gas pressure in a chamber as the pressure in the chamber changes over time, comprising steps of: determining a correlation factor between an absolute pressure measurement from the absolute pressure sensor that is considered to be accurate and reliable and a differential pressure measurement from the differential pressure sensor taken at the same time as the absolute pressure measurement; using the absolute pressure measurements from the absolute pressure sensor for the absolute chamber pressure

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profile in pressure ranges where the absolute pressure measurements from the absolute pressure sensors are more accurate and reliable than the differential pressure measurements from the differential pressure sensor; and using the differential pressure measurements from the differential pressure sensor, adjusted by the correlation factor to provide virtual absolute pressure measurements, for the absolute chamber pressure profile where the differential pressure measurements from the differential pressure sensor are more accurate and reliable than the absolute pressure measurements from the absolute pressure sensor, as recited in claim(s) 13.

In combination with other limitations of the claims, the cited prior arts fails to teach an apparatus for measuring absolute pressure in a chamber over time, comprising: means connected to the differential pressure sensor and to the absolute pressure sensor for determining a correlation factor between absolute pressure measurements from the absolute pressure sensor and differential pressure measurements from the differential pressure sensor; means for adjusting differential pressure measurements from the differential pressure sensor with the correlation factor to produce virtual absolute pressure measurements; and means for outputting the absolute pressure measurements from the absolute pressure sensor in chamber pressure ranges where the absolute pressure measurements from the absolute pressure sensor are more accurate and reliable than the virtual absolute pressure measurements and for outputting the virtual absolute pressure measurements in chamber pressure ranges where the virtual pressure measurements are more accurate

and reliable than the absolute pressure measurements from the absolute pressure sensor, as recited in claim(s) 23.

U.S. Patent No. 6,672,171 disclose a transducer apparatus and method combining both an absolute pressure sensor for sensing absolute pressure in the load lock chamber and a differential pressure sensor for sensing a pressure difference between ambient atmospheric pressure and pressure in a load lock chamber and provides control signals for opening an interior door from the load lock chamber into a vacuum processing chamber and for opening an exterior door between ambient atmosphere and the load lock chamber. The transducer can also produce signals to control transition from slow to fast vacuum pump-down of load lock chamber pressure at a predetermined pressure set point. '171 fails to specify the steps of determining the absolute pressure in the chamber to be equivalent to the measured absolute chamber pressure, when the measured absolute chamber pressure is less than the cross-over pressure level; determining the absolute pressure in the chamber to be equivalent to a normalized differential pressure, when the measured absolute pressure is greater than the cross-over pressure level, including determining the normalized differential pressure by adding a correlation factor to the measured differential chamber pressure, wherein the correlation factor is equal to the measured absolute chamber pressure minus the measured differential chamber pressure, as now recited in claim 1 of the present invention. '171 also fails to specify the steps of determining a correlation factor between an absolute pressure measurement from the absolute pressure sensor that is considered to be accurate and reliable and a differential pressure measurement from

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the differential pressure sensor taken at the same time as the absolute pressure measurement; using the absolute pressure measurements from the absolute pressure sensor for the absolute chamber pressure profile in pressure ranges where the absolute pressure measurements from the absolute pressure sensors are more accurate and reliable than the differential pressure measurements from the differential pressure sensor; and using the differential pressure measurements from the differential pressure sensor, adjusted by the correlation factor to provide virtual absolute pressure measurements, for the absolute chamber pressure profile where the differential pressure measurements from the differential pressure sensor are more accurate and reliable than the absolute pressure measurements from the absolute pressure sensor, as recited in claim 13 of the present invention. '171 also fails to specify means connected to the differential pressure sensor and to the absolute pressure sensor for determining a correlation factor between absolute pressure measurements from the absolute pressure sensor and differential pressure measurements from the differential pressure sensor; means for adjusting differential pressure measurements from the differential pressure sensor with the correlation factor to produce virtual absolute pressure measurements; and means for outputting the absolute pressure measurements from the absolute pressure sensor in chamber pressure ranges where the absolute pressure measurements from the absolute pressure sensor are more accurate and reliable than the virtual absolute pressure measurements and for outputting the virtual absolute pressure measurements in chamber pressure ranges where the virtual pressure measurements are more accurate and reliable than the

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absolute pressure measurements from the absolute pressure sensor, as recited in claim 23 of the present invention.

U.S. Patent No. 5,107,441 discloses a method for determining the flow performance of a pressure respective valve in which the flow rate of the valve is measured at a plurality of different values of pressures drop across the valve and at different fixed stem positions of the valve. '441 fails to specify the steps of determining the absolute pressure in the chamber to be equivalent to the measured absolute chamber pressure, when the measured absolute chamber pressure is less than the cross-over pressure level; determining the absolute pressure in the chamber to be equivalent to a normalized differential pressure, when the measured absolute pressure is greater than the cross-over pressure level, including determining the normalized differential pressure by adding a correlation factor to the measured differential chamber pressure, wherein the correlation factor is equal to the measured absolute chamber pressure minus the measured differential chamber pressure, as now recited in claim 1 of the present invention. '441 also fails to specify the steps of determining a correlation factor between an absolute pressure measurement from the absolute pressure sensor that is considered to be accurate and reliable and a differential pressure measurement from the differential pressure sensor taken at the same time as the absolute pressure measurement; using the absolute pressure measurements from the absolute pressure sensor for the absolute chamber pressure profile in pressure ranges where the absolute pressure measurements from the absolute pressure sensors are more accurate and reliable than the differential pressure measurements from the differential pressure

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sensor; and using the differential pressure measurements from the differential pressure sensor, adjusted by the correlation factor to provide virtual absolute pressure measurements, for the absolute chamber pressure profile where the differential pressure measurements from the differential pressure sensor are more accurate and reliable than the absolute pressure measurements from the absolute pressure sensor, as recited in claim 13 of the present invention. '441 also fails to specify means connected to the differential pressure sensor and to the absolute pressure sensor for determining a correlation factor between absolute pressure measurements from the absolute pressure sensor and differential pressure measurements from the differential pressure sensor; means for adjusting differential pressure measurements from the differential pressure sensor with the correlation factor to produce virtual absolute pressure measurements; and means for outputting the absolute pressure measurements from the absolute pressure sensor in chamber pressure ranges where the absolute pressure measurements from the absolute pressure sensor are more accurate and reliable than the virtual absolute pressure measurements and for outputting the virtual absolute pressure measurements in chamber pressure ranges where the virtual pressure measurements are more accurate and reliable than the absolute pressure measurements from the absolute pressure sensor, as recited in claim 23 of the present invention.

U.S. Patent No. 3,350,931 discloses an apparatus for measuring small differential pressure changes in a well having a wellhead comprising: a reference pressure cell initially charged to the pressure level of the wellhead; a bi-directional,

differential-pressure transducer connected between the wellhead and the reference pressure cell; an auxiliary pressure cell charged to a pressure substantially above the pressure of the reference cell; a cross-over assembly interconnecting the vent tank and auxiliary pressure cell with the first and second liquid flow conduits, including means for alternately providing flow communication from the vent tank or auxiliary cell to the first and second flow conduits. '931 fails to specify the steps of determining the absolute pressure in the chamber to be equivalent to the measured absolute chamber pressure, when the measured absolute chamber pressure is less than the cross-over pressure level; determining the absolute pressure in the chamber to be equivalent to a normalized differential pressure, when the measured absolute pressure is greater than the cross-over pressure level, including determining the normalized differential pressure by adding a correlation factor to the measured differential chamber pressure, wherein the correlation factor is equal to the measured absolute chamber pressure minus the measured differential chamber pressure, as now recited in claim 1 of the present invention. '931 also fails to specify the steps of determining a correlation factor between an absolute pressure measurement from the absolute pressure sensor that is considered to be accurate and reliable and a differential pressure measurement from the differential pressure sensor taken at the same time as the absolute pressure measurement; using the absolute pressure measurements from the absolute pressure sensor for the absolute chamber pressure profile in pressure ranges where the absolute pressure measurements from the absolute pressure sensors are more accurate and reliable than the differential pressure measurements from the differential pressure

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sensor; and using the differential pressure measurements from the differential pressure sensor, adjusted by the correlation factor to provide virtual absolute pressure measurements, for the absolute chamber pressure profile where the differential pressure measurements from the differential pressure sensor are more accurate and reliable than the absolute pressure measurements from the absolute pressure sensor, as recited in claim 13 of the present invention. '931 also fails to specify means connected to the differential pressure sensor and to the absolute pressure sensor for determining a correlation factor between absolute pressure measurements from the absolute pressure sensor and differential pressure measurements from the differential pressure sensor; means for adjusting differential pressure measurements from the differential pressure sensor with the correlation factor to produce virtual absolute pressure measurements; and means for outputting the absolute pressure measurements from the absolute pressure sensor in chamber pressure ranges where the absolute pressure measurements from the absolute pressure sensor are more accurate and reliable than the virtual absolute pressure measurements and for outputting the virtual absolute pressure measurements in chamber pressure ranges where the virtual pressure measurements are more accurate and reliable than the absolute pressure measurements from the absolute pressure sensor, as recited in claim 23 of the present invention.

U.S. 2001/0029889 A1 discloses load lock controls for vacuum processing chambers and more particularly to a combination differential and absolute pressure transducer for load lock control and a method of controlling load locks with such

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combination differential and absolute pressure transducer. '2001/0029889 fails to specify the steps of determining the absolute pressure in the chamber to be equivalent to the measured absolute chamber pressure, when the measured absolute chamber pressure is less than the cross-over pressure level; determining the absolute pressure in the chamber to be equivalent to a normalized differential pressure, when the measured absolute pressure is greater than the cross-over pressure level, including determining the normalized differential pressure by adding a correlation factor to the measured differential chamber pressure, wherein the correlation factor is equal to the measured absolute chamber pressure minus the measured differential chamber pressure, as now recited in claim 1 of the present invention. '2001/0029889 also fails to specify the steps of determining a correlation factor between an absolute pressure measurement from the absolute pressure sensor that is considered to be accurate and reliable and a differential pressure measurement from the differential pressure sensor taken at the same time as the absolute pressure measurement; using the absolute pressure measurements from the absolute pressure sensor for the absolute chamber pressure profile in pressure ranges where the absolute pressure measurements from the absolute pressure sensors are more accurate and reliable than the differential pressure measurements from the differential pressure sensor; and using the differential pressure measurements from the differential pressure sensor, adjusted by the correlation factor to provide virtual absolute pressure measurements, for the absolute chamber pressure profile where the differential pressure measurements from the differential pressure sensor are more accurate and reliable than the absolute pressure

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measurements from the absolute pressure sensor, as recited in claim 13 of the present invention. '2001/0029889 also fails to specify means connected to the differential pressure sensor and to the absolute pressure sensor for determining a correlation factor between absolute pressure measurements from the absolute pressure sensor and differential pressure measurements from the differential pressure sensor; means for adjusting differential pressure measurements from the differential pressure sensor with the correlation factor to produce virtual absolute pressure measurements; and means for outputting the absolute pressure measurements from the absolute pressure sensor in chamber pressure ranges where the absolute pressure measurements from the absolute pressure sensor are more accurate and reliable than the virtual absolute pressure measurements and for outputting the virtual absolute pressure measurements in chamber pressure ranges where the virtual pressure measurements are more accurate and reliable than the absolute pressure measurements from the absolute pressure sensor, as recited in claim 23 of the present invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John H. Le whose telephone number is 571-272-2275. The examiner can normally be reached on 7:00 - 3:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John H. Le

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January 30, 2005



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